

WHAT IS CLAIMED IS:

CLAIMS

1. A method of synchronizing a set of video data to a set of audio data that is being played at a variable rate comprising the steps of:

5 defining a correspondence between an original set of audio data and an original set of video data such that the original set of audio data and the original set of video data are synchronized;

creating a modified set of audio data that corresponds to the original set of audio data;

10 establishing a correspondence between the modified set of audio data and the original set of video data; and

creating a modified set of video data that corresponds to the original set of video data, based on the modified set of audio data and the correspondence between the modified set of audio data and the original set of video data, such that the modified set of video data is synchronized with the modified set of audio data.

2. A method of synchronizing a set of video data to a set of audio data that is being played at a variable rate comprising the steps recited in Claim 1 wherein the step of defining a correspondence between the original set of audio data and the original set of video data comprises the steps of:

20 dividing the original set of video data into a plurality of subunits, each representing a substantially equal duration of time;

dividing the original set of audio data into a plurality of segments, each segment representing a duration of time that is approximately coincident with and substantially equal to the duration of time of a corresponding subunit of the original set of video data; and

5 identifying corresponding subunits of the original set of video data and segments of the original set of audio data.

3. A method of synchronizing a set of video data to a set of audio data that is being played at a variable rate comprising the steps recited in Claim 1 wherein establishing a correspondence between the modified set of audio data and the original set of video data

10 is based upon the correspondence between the modified set of audio data and the original set of audio data and the correspondence between the original set of audio data and the original set of video data.

4. A method of synchronizing a set of video data to a set of audio data that is being played at a variable rate comprising the steps recited in Claim 1 wherein the step of

15 creating a modified set of video data comprises the steps of:

identifying one or more partial or complete subunits of the original set of video data that correspond to audio segments of the modified set of audio data, based upon the correspondence between the modified set of audio data and the original set of video data; and

20 modifying the subunits of the original set of video data as necessary to produce the modified set of video data so that there is a one-to-one correspondence between audio segments of the modified set of audio data and subunits of the modified set of video data.

5. A method of synchronizing a set of video data to a set of audio data that is being played at a variable rate comprising the steps recited in Claim 1 wherein the step of creating a modified set of video data comprises the steps of:

grouping the modified set of audio data into audio segments;

5 identifying one or more partial or complete subunits of the original set of video data that correspond to each of the audio segments of the modified set of audio data, based upon the correspondence between the modified set of audio data and the original set of video data; and

modifying the subunits of the original set of video data as necessary to produce
10 the modified set of video data so that there is a one-to-one correspondence between audio segments of the modified set of audio data and subunits of the modified set of video data.

6. A method of synchronizing a set of video data to a set of audio data that is being played at a variable rate comprising the steps recited in Claim 1 wherein the step of creating a modified set of video data comprises the steps of:

15 grouping the modified set of audio data into audio segments, each segment representing a duration of time that is approximately coincident with and substantially equal to the duration of time of a subunit of video data;

identifying one or more partial or complete subunits of the original set of video data that correspond to each of the audio segments of the modified set of audio data,
20 based upon the correspondence between the modified set of audio data and the original set of video data; and

modifying the subunits of the original set of video data as necessary to produce the modified set of video data so that there is a one-to-one correspondence between audio segments of the modified set of audio data and subunits of the modified set of video data.

7. A method of synchronizing a set of video data to a set of audio data that is being played at a variable rate comprising the steps recited in Claim 1 wherein the step of creating a modified set of video data comprises the steps of:

grouping the modified set of audio data into audio segments, each segment representing a duration of time that is approximately coincident with and substantially equal to the duration of time of a frame of video data;

identifying one or more partial or complete frames of the original set of video data that correspond to each of the audio segments of the modified set of audio data, based upon the correspondence between the modified set of audio data and the original set of video data; and

modifying the frames of the original set of video data as necessary to produce the modified set of video data so that there is a one-to-one correspondence between audio segments of the modified set of audio data and frames of the modified set of video data.

8. A method of synchronizing a set of video data to a set of audio data that is being played at a variable rate comprising the steps recited in Claim 1, wherein the step of creating a modified set of video data includes the step of eliminating data from the original set of video data.

9. A method of synchronizing a set of video data to a set of audio data that is being played at a variable rate comprising the steps recited in Claim 1, wherein the step of

creating a modified set of video data includes the step of adding data to the original set of video data.

10. A method of synchronizing a set of video data to a set of audio data that is being played at a variable rate comprising the steps recited in Claim 1, wherein the step of
5 creating a modified set of video data includes the step of blending data from the original set of video data so that the modified set of video data has less data than the original set of video data.

11. A method of synchronizing a set of video data to a set of audio data that is being played at a variable rate comprising the steps recited in Claim 1, wherein the step of
10 creating a modified set of video data includes the step of synthesizing data, based on the data in the original set of video data, so that the modified set of video data has more data than the original set of video data.

12. A method of synchronizing a set of video data to a set of audio data that is being played at a variable rate comprising the steps recited in Claim 1, further comprising the
15 steps of:

generating an audio display from the modified set of audio data; and
generating a video display from the modified set of video data.

13. A computer program product for synchronizing a set of video data to a set of audio data that is being played at a variable rate, the computer product being embodied in
20 a computer readable medium and comprising computer instructions for:

defining a correspondence between an original set of audio data and an original set of video data such that the original set of audio data and the original set of video data are synchronized;

creating a modified set of audio data that corresponds to the original set of audio data;

establishing a correspondence between the modified set of audio data and the original set of video data; and

5 creating a modified set of video data that corresponds to the original set of video data, based on the modified set of audio data and the correspondence between the modified set of audio data and the original set of video data, such that the modified set of video data is synchronized with the modified set of audio data.

14. A system for synchronizing a set of video data to a set of audio data that is being
10 played at a variable rate comprising a processor configured to:

define a correspondence between an original set of audio data and an original set of video data such that the original set of audio data and the original set of video data are synchronized;

create a modified set of audio data that corresponds to the original set of audio
15 data;

establish a correspondence between the modified set of audio data and the original set of video data; and

create a modified set of video data that corresponds to the original set of video data, based on the modified set of audio data and the correspondence between the
20 modified set of audio data and the original set of video data, such that the modified set of video data is synchronized with the modified set of audio data.